A STUDY ON IMPLEMENTATION OF INFORMATION TECHNOLOGY (IT) AND ITS RELATIONSHIP WITH FIRM PERFORMANCE

NOOR ELLEZA AQILA BINTI ABDULLAH

Thesis submitted in fulfilment of the requirements
for the award of the degree of
Bachelor of Industrial Technology Management with Honors

Faculty of Technology
UNIVERSITI MALAYSIA PAHANG

DECEMBER 2013

ABSTRACT

This study deals with the small and medium enterprises (SMEs) implementation of information technology (IT) and its relationship with firm performance. The objectives of this study are to identify the level of SMEs owners' IT adoption and to analyze the relationship between SMEs owners' IT adoption and firm performance. A 180 survey questionnaire was distributed to foods and beverages SMEs owners in Johor and a total of 166 responses were collected. The data were analyzed by using Statistical Package for the Social Sciences (SPSS). From the results obtained, it is concluded that the SMEs owners in Johor were highly adopting IT in their firm. The Pearson's correlation was tested on the independent variables; IT Infrastructure, Strategic Alignment, Organizational Structure and Individual Learning with dependent variable; Firm performance, discovered that there is a positive correlation coefficient between the IT adoption variables. This field of study were hoped to contribute a deeper understanding on the importance of IT adoption as it can affect the performance of their firm.

ABSTRAK

Kajian ini membincangkan pelaksanaan teknologi maklumat (IT) dan hubungannya dengan prestasi firma terhadap perusahaan kecil dan sederhana (SME). Objektif kajian ini adalah untuk mengenal pasti tahap penggunaan IT oleh pemilik SME dan untuk menganalisis hubungan antara penggunaan IT oleh pemilik SME dan prestasi firma. Sebanyak 180 borang soal selidik telah diedarkan kepada pemilik makanan dan minuman SME di Johor dan sejumlah 166 respon diperoleh. Data dianalisis dengan menggunakan Pakej Statistik untuk Sains Sosial (SPSS). Dari keputusan yang diperolehi, ianya dapat dirumuskan bahawa pemilik SME di Johor amat menerima pakai IT dalam firma mereka. Korelasi Pearson telah diuji ke atas pembolehubah bebas; Infrastruktur IT, Penjajaran Strategik, Struktur Organisasi, Pembelajaran Individu dengan pembolehubah bersandar; Prestasi Firma, mendapati bahawa terdapat pekali korelasi yang positif antara pembolehubah penggunaan IT. Bidang Kajian ini diharapkan dapat menyumbang pemahaman yang lebih mendalam tentang kepentingan menggunakan IT kerana ia boleh memberi kesan kepada prestasi firma mereka.

TABLE OF CONTENTS

CHAPTER 2 LITERATURE REVIEW

CHAPTER 3 RESEARCH METHODOLOGY

CHAPTER 4 RESULT AND DISCUSSIONS

CHAPTER 5 CONCLUSION AND RECOMMENDATION

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

EDI	Electronic Data Interchange
EPU	Economic Planning Unit
IS	Information System
IT	Information Technology
ICT	Information and Communication Technology
MIT90s	Management in the 90s
MITI	Malaysia International Trade and Industry
NEP	New Economic Policy
SMEs	Small and Medium Enterprises
SME Corp.	Small and Medium Enterprises Corporation Malaysia
SMIDEC	Small and Medium Industries Development Corporation
SPSS	Statistical Package for the Social Sciences

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

This chapter discusses about the problem background, problem statement, purpose of the study, objective of the study, research questions, expected result, significance of the study and scope of the study, theoretical framework and operational definitions used in this study. This chapter also reviews about the related issues about Information Technology (IT) and its adoption by Small and Medium Enterprises (SMEs) owners' also it relationship between the SMEs firm performance.

From the early 1970, the development of SMEs started in Malaysia when the New Economic Policy (NEP) introduced by the Government in 1971. According to Salleh and Ndubisi (2006), the policy purpose is to improve the people's welfare and restructure ethnic economic imbalances in Malaysia. The need in amplifying SME development is noteworthy since it is expected to be the key component of Malaysia to achieve global competitiveness, economic growth and developed country status by year 2020 (MITI, 2006). Based on census of establishments and enterprise by SME Corp. Malaysia (2011), there is a total of 662,939 SME companies in operations. Out of this, a total of 645,136 or 97.3% were defined as SME. In the distribution of the percentage of SMEs by state, Johor is in the third state higher by 10.7 % after Selangor by 19.5% and Wilayah Persekutuan Kuala Lumpur by 13.1%.

The role of IT is important in improving small businesses' as a contributor to nation's economic growth. However, the use of IT in Malaysia is not so impressive among SMEs entrepreneurs. According to SME Corp. Malaysia (2011), the percentage

of ICT usage among SMEs in business operations is only 27%. The rest 73% of SMEs did not apply ICT in their business operation. But, a very impressive achievement made by SMEs is recorded. The totals of 67% of the SMEs are the internet users, while the rest of 33% are not the internet users. The percentage shows that the majority of SMEs owners know how to use the internet.

The reason of why most of SMEs did not implement IT in their business is due to some factors. One of the important factors is afraid of investing more in IT. Since Malaysia SMEs is more on conducting manufacturing businesses and according to Shaukat and Zafarullah (2010), manufacturing sector is investing much more on IT. Another problem may faced by SMEs are lack of skill and knowledge of using IT. Since the cost for developing IT is very costly for the small-scale firms and most of the employees are from the middle-age workers, they cannot even send their employees to get training or learning IT. Hu (1998) pointed out that technology barrier is one critical road block in knowledge transfer, today the main barrier is people being unable to digest the overabundance of information they have at their fingertips (Smith, 2001). These factors undoubtedly limit the SMEs to adopt IT.

The important of profound study on the IT with the small-scale business is to identify the SMEs owners' perception of IT adoption in Johor, particularly to identify what implication it can bring towards the performance of SMEs in Johor. For the small scale business, the major party that dominantly concern with the decision making is the owner and the executives. They embraced important roles in the decision making which utilizing IT in their companies. Besides, their involvement in the process of technology adoption holds important factor in improving the intensity of the use of IT. The issues related to SMEs and IT will be discussed next in the problem background.

1.2 PROBLEM BACKGROUND

The studies on implementation of IT within SMEs have been limited compared with the large corporation or enterprises. There are several issues that correlated between IT and SMEs. One of the often-raised issues is the impact of IT on small enterprise performance. The benefit of the implementation of IT can improve

organizational performance (Shaukat and Zafrullah, 2010). According to Suhaiza et al. (2006), SMEs with more favorable attitude toward adopting ICT will attain effective knowledge management.

One of the similar problems faced by SMEs entrepreneur are access to management and technology (Wang, 2003), inadequate technological capability (EPU, 2006), and shortage in accessing to ICT and technology development (Saleh and Ndubisi, 2006). According to Toto et al. (2010), there are three main problems in encouraging small business owners to use IT; which is including perception that IT is expensive and, therefore it could not be afforded by small business owners; limited technological resources and lack in IT infrastructure; and both quantity and quality of human resources. Moreover, respondents tend to belief that the internet is useful for their business. They found that learning internet technology is not that easy, however, they are confident that they-supported by adequate training internet technology-will be able to learn it. Interestingly, respondents, on average, still believe and understand that internet technology is difficult to learn and, more than that, to some extent is "frightening".

Some researchers stated that the implementation of IT within firms is costly. Previous research conducted by Dewan et al. (1998) and Hitt (1999) in the study of IT relation with diversified firms concluded that IT can affect firm structure by reducing costs of coordinating economic activities within firms. Dewan et al. (1998) found that diversified firms, especially in related lines of business, make greater investments in IT. They argue that their findings might reflect a greater need for coordination of assets within diversified firms. Hitt (1999) provides similar findings from his analysis of the link between IT and diversification: firms that were more diversified had a higher demand for IT capital. He also argues that increased use of IT is associated with a slight increase in diversification.

According to Lim (2006) most Malaysia's SMEs realize that ICT is critical to the performance and productivity of their companies but the implementation and maintenance of these ICT systems are limited due to the inability to manage, because of high staff turnover and lack of expertise in ICT project management. He also

emphasized that, many Malaysian families-based SMEs are still running their business by conventional means. Therefore, SMEs which has invested in ICT systems failed to perform and retain these systems successfully. Similarly, Tan (2006) argues that ICT in Malaysia is facing big challenges due to the slow adoption of technology by SMEs in Malaysia. He suggested that SMEs must learn to use technology to enhance their competitiveness globally.

From the previous researcher statement above, it can be concluded that the implementation of IT as well as important in improving the firm performance, but there are some shortage that need to be pay a close look with. This shortage could hinder the SMEs to be more efficient in their business operations. The perception itself about 'IT is expensive' should not be a barrier for a firm to keep success. In order to keep survive in this harsh and competitive economic world, SMEs should take the challenges to learn and adapt the technology

1.3 PROBLEM STATEMENT

With the increasing number of SMEs in Malaysia, it is probably meant the increasing of the strong competition between SMEs. To survive in the health business competition, firm tend to use any mean to improve their firm performance. One of the approaches available is the implementation of IT by SMEs owner. IT implementation aligned to business needs, regardless of the business size, is a critical prerequisite for exploiting the potential of IT (Junaidah, 2007). The adoption of IT by SMEs is encouraging a new and more efficient way of doing business and generating new business. To achieve this goal, the government offers loans to SMEs to upgrade the system, technology acquisition, training, electronic commerce activities and consultancy fees (Karkoviata, 2001). However, SMEs in Malaysia still remains in the old notch.

Malaysian businesses, small and medium-sized enterprises (SMEs) have been relatively slow in web adoption. According to Khairul and Ahmad (2005), there are about 30% of Malaysia's SMEs have a website existence and use IT widely in their daily operations. This reflects a poor pace of IT usage among the estimated 600,000 of local SMEs.

The studies on IT within SMEs are very limited compared to a larger enterprise and corporations. The SMEs operators or owners are individuals who should play a bigger part in aiming business's objectives and policies. The approaches toward IT adoption are one small step that the SMEs individuals should set in mind. The application of IT should start with the individuals. For example, the key individuals are the owner, and the intensity of IT application by the owner is deemed to have a major impact on some firm (Myers and Kappelman, 1997).

Therefore, this study will focus on the SMEs implementation of IT and its relationship with firm performance. In this study author are aims to identify the level of SMEs owners' IT adoption and also to examine the relationship between IT adoption by SMEs owners and firm performance.

1.4 OBJECTIVES OF STUDY

There are 2 main objectives of this study. The objectives are:

(i) To identify the level of SMEs owners' IT adoption.

(ii) To analyze the relationship between SME owners' IT adoption and firm performance.

1.5 RESEARCH QUESTIONS

The exploration of this study will covered this two research questions:

(i) What is the level of SMEs owners' IT adoption?

(ii) What is the relationship between IT adoption and firm performance?

1.6 EXPECTED RESULT

(i) Identify the level of SMEs owners' IT adoption.

From the survey result of research, the author will identify the level of SMEs owners' IT adoption in food and beverage industries. From this research, the level of IT adoption among SMEs owners will be determined.

(ii) Analyze the relationship between SME owners' IT adoption and firm performance.

The finding from this research will explore the relationship between IT adoption by SME owners and firm performance. This is because of SMEs owners are the main protagonist in encouraging the fellow employees to learn more about IT in order to improve the firm performance. This study may give impact on SMEs owners in Johor thus encourages them in adopting IT in SMEs.

1.7 SIGNIFICANCE OF STUDY

For the SMEs owners, the proposed study will help them to have a deeper understanding on the importance of IT adoption as it can affect the performance of their firm. Also, it will trigger the new ideas on how to use IT technology to improve their firm performance.

For the government agencies, the proposed study will encourage them to help more SMEs by providing funds for them to improve their company. For example, government agencies can also provide more training, system upgrades, acquisition of technology, consultation fees and electronic trading activities that related to IT learning skills and knowledge.

The proposed study will also help in the creation of general contribution for all area of study and in the creation of a new knowledge for academic areas of study as well. The study will inform the people out there about, the importance of IT adoption in this present time.

1.8 SCOPE OF STUDY

This study conducted on the SMEs implementation of IT and its relationship with firm performance. The study conducted on food and beverage SMEs around Johor. Johor is chosen because Johor is the third state in Malaysia focuses on SMEs business practice. In 2011, the population of SMEs food and beverage company in Johor that are registered with SME Corp. Malaysia is about 314 companies. The expected sample size will be 180 companies. The respondents will be selected randomly from food processing SMEs owners in Johor. The SMEs owners will be chosen as the subject for this study because owners are a key individual for a firm to keep success. The food and beverage processing SMEs will be chosen as the population under study because, it is said that most of food processors are not very aware of the development of technology. The method of this study is surveying. The tool of measuring the survey will be a questionnaire. The survey will be conducted within July and August of 2013. The study will be carried out to identify the SMEs IT adoption level and to study the relationship between IT adoption and firm performance.

1.9 CONCEPTUAL FRAMEWORK

Figure 1.1 shows the conceptual framework of this study. From the Figure 1.1, the relationship between independent variables and the dependent variables can be seen. The independent variables for this study which is IT adoption will be measured by the four factors which are: (i) IT infrastructure, (ii) strategic alignment, (iii) organizational structure and (iv) individual learning. These factors will measure the SMEs owners IT adoption level in their business.

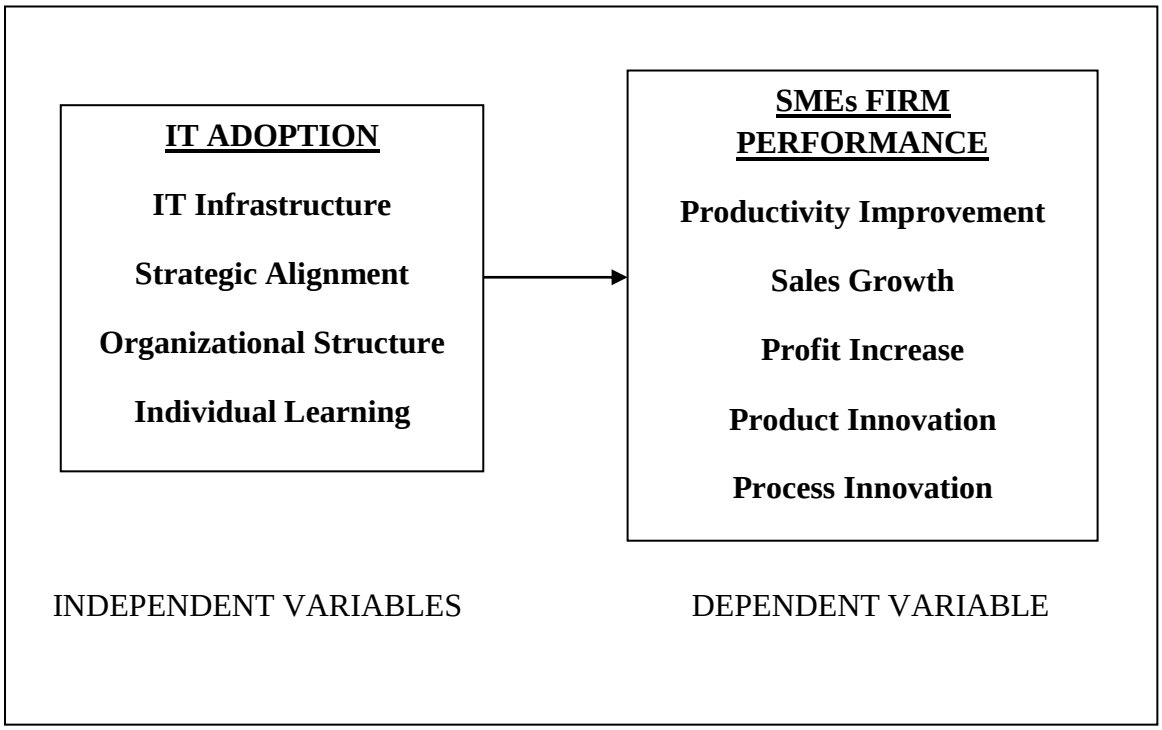

Figure 1.1: A Conceptual framework

Related to that, SMEs firm performance which is dependent variables will be measured based on owners' assessment regarding to their firm performance whether the adoption of IT will affect their firm performance in term of (i) productivity improvement, (ii) sales growth, (iii) profit increase, (iv) product innovation, and (v) process innovation.

1.10 OPERATIONAL DEFINITIONS

1.10.1 Information Technology (IT)

According to Daintith and John (2009), IT is refers to the application of computer and telecommunications equipment to store, retrieved, transmit and manipulate data. Also IT is the study and development of a support-management based, computerized information system (Proctor, 2011). The development is mainly observed in the form of dedicated software applications and a number of hardware programs. In

business perspectives, it also defines an industry that uses computers, software programming, networking and processes to store, retrieve, process, transmit, and protect information (Proctor, 2011). In the current business environment, being proficient in computer is often a necessity for those who compete in the workplace.

1.10.2 Small and Medium Enterprises (SMEs)

The definition of SMEs is updated to take account of the firm's economics performance. Malaysia's Ministry of Internal Trade and Industry (MITI, 2009) defined an SME as a company with (1) an annual sales turnover of not more than RM25 million, and (2) not more than 150 full-time employees. The term SME also have been used in the European Union and by international organizations such as the World Bank, United Nation and the World Trade Organization. Malaysia adopted a common definition of SMEs to facilitate identification of SMEs in the various sectors and subsectors. This has helped the Government to design the effective development policies, provision of technical and financial assistance as well as support programs. An enterprise is considered an SME in each of the respective sectors based on the Number of Full-Time Employees or Annual Sales Turnover as stated by SME Corp. Malaysia.

1.10.3 IT Adoption

IT adoption is described as the willingness of an individual or user to try out any new information technology (Agarwal and Prasad, 1998). According to Dimara and Skuras (2003), adoption of technology is fully informed about the new technology and its potential. In this related definition, it can be concluded that, IT adoption is defined as the users or individuals who are potentially and fully informed about the new related information technology. Since the definition of adoption varies according to the subject, the above definition can be accepted for the purpose of this study.

1.10.4 Firm Performance

The firm performance or organizational performance comprises the actual output or result of an organization or firm as measured against its intended outputs (or goal and objectives). Organizational performance encompasses three specific areas of firm outcomes: (a) financial performance (profit, return on assets, return on investment, etc.); (b) product market performance (sales, market share, etc.); and (c) shareholder return (total shareholder return, economic value added, etc.) (Richard et al., 2009).

1.10.5 Food Processing Industries

The processing of food can be defined in many ways. A simple definition of food processing is the conversion of raw materials or ingredients into a consumer food product (Heldman and Hartel, 1997). According to this definition, the food processing industries is the sectors that converse the raw materials or ingredients in food products. This definition is considered accepted for the purpose of this study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The organizations or firms increasingly rely on IT to improve their performance. Nowadays, all of works related to the application are now completely automated, thanks to IT. Thus, the IT become tools that has brought significant improvements in business operation. Now that SMEs business field has become very competitive, there is a need to use IT to remain ahead in business. With IT, it is expected that the performance of SMEs will be increased. So, the IT has some effects on SMEs performance, which is being taken as a benchmark by another SMEs business.

What is the relevance in adopting IT in business? The answers might be bred due to the individuals' perception. In business, IT are very important in supporting business accounting, financial, marketing, production or/and operation management, human resources management and also management information systems (MIS). There is nothing that can limit IT role in business.

In Malaysia, IT is seen as medium to improve business capabilities and performances. IT adoption by small business often viewed as a basic building block of economic development. SMEs in Malaysia for example, belong to the sectors that still sunken from technological development. There are so many obstructions that hindered the SMEs in Malaysia to use IT in their firm. There are several reasons why most of SMEs in Malaysia did not implement IT in their firms. One of the important factor is the cost of investing in IT are too much for SMEs to bear. Moreover, they may face problem such lack of knowledge and skills in using IT. These reason showed that SMEs

face a very critical technology barrier in this era of technology and this shortage may limit SMEs in becoming efficient in business operation (Salleh and Ndubisi, 2006).

However, not every negative view is received from the SMEs about IT adoption in their firms. As revealed by Toto et al. (2010) stated that some of SMEs tend to belief that the internet is very useful for their business despite their perceptions on IT is not an easy. Thus, they are confident that if they supported by an adequate training, they will be able to learn it.

With that, this study aims to explore the level of IT adoption among SMEs owner in Malaysia and revealed the relationship of IT adoption to firms' performance.

2.2 SMEs AND IT ADOPTION

Most of the businesses have now accepted IT as an important tool to increase its business performance as well as in the global market. In order to increase the effectiveness of IT, the companies can use the internet to promote almost unlimited information about their products and services. In future, it is believed that IT in Malaysia SMEs sectors will grow more rapidly.

As been defined in chapter 1, IT adoption can be concluded as the users or individuals who are potentially and fully informed about the new related information technology.

The factors that affecting technology adoption can be divided into organizational, technological and environmental characteristics and these three factors have positive influences on the adoption of ICT (Suhaiza et al., 2006). They also concluded that SMEs with more favorable attitude toward adopting ICT will attain effective knowledge management. Moreover, it is found that higher explicitness and accumulation of technology can help the transfer of technological knowledge within the organization and can raise the capability to adopt ICT. SMEs can increase their adoption abilities by encouraging or supporting their employees to adopt ICT as well as by training and educating their employees to become intelligent workers.

According to Syed Shah and Nilufar (2007) in their previous research, most of the companies were not actively participate in the development of ICT in their business operation. About 78.89% of the 180 companies in their study never develop a formal ICT training plan for employees, and that makes the companies lacks of trained personnel in IT implementation. Next, about 90.56% of the companies never develop a website for their business. This is mostly comes from the factors of the SMEs have limited financial budget with smaller business structure and even smaller number of employees. However, 74.44% of the companies were asked by their customer or trading partner to use email when dealing with business matter. This can be believed that emails were used as a communication channel by these portions of companies. A result, email can be the most effective electronic communication method between companies in the small business. The outcomes of the study reveal that the investment on ICT in Malaysia is relatively low since the most respondents of the study are unwilling or unable to adopt ICT in their business due to several reasons.

2.2.1 IT Adoption Level

There are some variable used to measure the level of IT adoption since it is a subjective matter. From the evaluation about their firms' IT adoption, the author can identify their level of IT adoption.

Most of the used levels of IT adoption are categorical as adopter and non adopter. In several studies, partial adopter and the full adopter term were used. To relate to formation system application and/or adoption Van Akkeren and Cavaye (1999) classified small enterprises, into three groups: non-adopter; adopter; and full-adopter. There are no specific definition for non-adopter, adopter and full-adopter.

IT adoption described as the willingness of users to try out any new information technology (Agarwal and Prasad, 1998) and fully informed about new technology and its potential (Dimara and Skuras, 2003). From these definition, it can be concluded that the non- adopter is individual that not willing to try out any new information technology and not fully informed about its potential. Whereas, the full-adopter can be defined as an individual who already expert in using new information technology and fully

informed about its potential. For adopter, it can be defined as individual who potentially willing to try new technology but lack of information about new technology and its potential.

The measurers for the IT adoption level are based on the four elements in Morton's Management in the 90s (MIT90s) Model (1995).

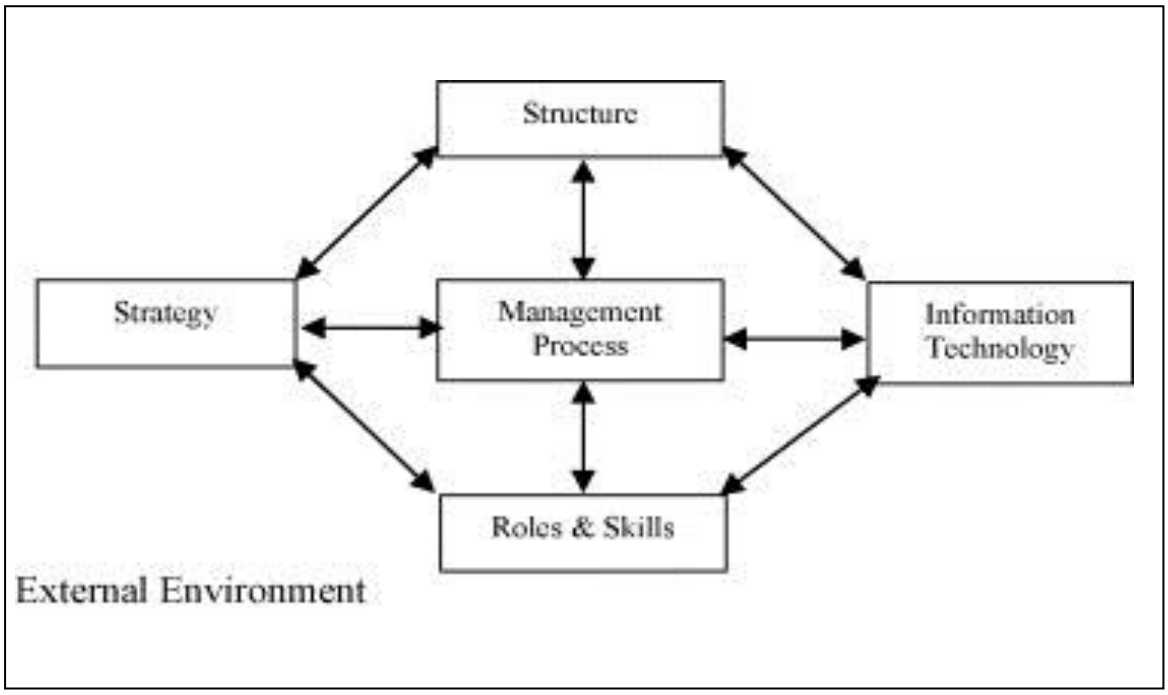

Figure 2.1: Morton's MIT90s Model 1995

Source: Morton (1995)

The term of the four elements is slightly modified as information technology infrastructure, strategic alignment, organizational structure and individual learning, without leaving the original meaning. For management process, it is considered separately for this study.

These four elements will be used as an independent variables in IT adoption measuring elements and included in this study conceptual framework (Figure 1.1).

2.2.2 IT Adoption Elements

Below are the simplest definitions on four basic elements in measuring IT adoption.

a) IT Infrastructure

According to Davenport et al. (1819), the IT infrastructure includes networks, management and allocations of massive computing, electronic data interchange (EDI), shared databases, and research and development to identify emerging technologies. The IT infrastructure will be measured by using four items that refer to the firm investment in related software, hardware, staffing and advanced internet application (Bharadwaj, 2000; Sircar et al., 2000).

b) Strategic Alignment

According to Chan et al. (1997) and Palmer and Markus (2000), strategic alignment suggest the effect of IT on performance will depends on how well the IT strategy and corporate strategy coincide. Henderson and Venkatraman (1993) added, the companies will be successful in aligning their business strategies and IT by balancing internal and external factors as well as business and IT domains. The strategic alignment will be measured using four items that refer to the firm alignment of its IT strategy with its corporate strategy to achieve greater effectiveness (Palmer and Markus, 2000; Reich and Benbasat, 1996 and Venkatraman, 1989).

c) Organizational Structure

Porras and Robertson (1992) state that organizational structure specifies the formal line communication; helps control, coordinating work activities also defines the work role allocation. While IT is being adopted, organizational structure often re-examines and adjusted to improve performance via innovation, pooled resources, and collaboration across organizational boundaries (Dewett and Jones, 2001). Organizational structure will be measured by using five items including organizational structural change for new business practices and for increasing employee empowerment, enabling inter-department or cross-functional integration, improving